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In Search of Extension Strategies for Minimising Risk in Rainfed Agriculture : Ten Propositions

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To reduce risk, rainfed farmers complicate and diversify their farming systems. In contrast, normal agricultural research and extension tend to standardise and simplify. To overcome the resulting misfit, reversals are needed in the approach, methods and roles of scientists and extensionists. As the experts on their farming systems, farmers have to be encouraged and enabled to do more of their own analysis, to identify what they want and need, and to make demands on extension and research. The new roles for extensionists include convenors and enablers, searchers, consultants and tour agents. The aim is to present farmers with baskets of choice instead of packages of practices, and to enable them to reduce risk and increase production by complicating and diversifying their farming systems.

This paper is a summary of evidence, assertions and arguments. Some of these can be found in more detail elsewhere (e.g. Farrington and Martin, 1988; Farrington (ed), 1988; sources annotated in Amanor, 1989; Chambers, Pacey and Thrupp, 1989; Chambers, 1990). It is presented in the form of ten propositions. For the sake of brevity, these are presented as simplistic assertions. However, the truth is always more vaired, complicated and subtle. To each proposition, the reader will have little difficulty in finding exceptions, country cases or points of qualification. For example, it would be absured to suggest that analysis should be done *only* by farmers, or that normal agricultural research has *no* part to play. The argument, rather, is that the propositions are substantially correct; that to serve better the needs and priorities of rainfed farmers, the roles and relationships of normal agricultural extension are part of the problem; and that changes and reversals are required in the roles and balance of power between extensionists and farm families.

1. Most rainfed farming systems are complex and diverse: Most rainfed farming systems are complex internally, with diverse micro-

environments, enterprises, nutrient flows, seasonal changes and linkages. The resources of land, water, nutrients, vegetation, livestock (including fish) and plant genetic material of any one farm can be very varied. Rainfed farming systems also often differ over short distances and even between neighbours, so that feasible recommendation domains are small and often misfit standardised top-down transfer of technology.

2. Rainfed farming systems are risk-prone and rainfed farm families try to reduce risk: Most rainfed agriculture is less reliable than most irrigated agriculture. In consequence, reducing risk is a more important objective for rainfed than for irrigated farm families. Caution is needed with the word "minimise". There are trade-offs between objectives: reducing risk is only one, though a major objective.

3. Rainfed farmers often seek to reduce risk by further complicating their farming systems. There are many ways in which rainfed farmers complicate their farming systems to meet their objectives, including reducing risk. Some of these are:

- adding new enterprises (smallstock, large livestock, fish, trees, vegetables, new crops...)
- mixed cropping (intercropping, sequence cropping, etc)
- creating, maintaining and protecting micro-environments which harvest, concentrate and exploit water, soil and nutrients
- multiplying internal and external linkages, increasing redundancy
- accumulating carry over stocks (water, nutrients, livestock, crops, trees...)
- preferring stress-tolerant, stress-avoiding, and pest and disease resistant varieties of crops and livestock
- maintaining stocks of several varieties to exploit different conditions (micro-environmental, seasonal, managerial etc.)
- diversification through on-farm and off-farm activities
- large families to diversify sources of food and cash
- spreading investment over several enterprises, and preferring divisible units
- experimenting continuously with practices and variations of practices

4. In contrast, transfer of technology (TOT) agricultural research and extension simplify and standardise: Normal TOT professionalism and bureaucracy are mutually reinforcing in their centralised, top-down, standardised package approach. Reductionist research simplifies and controls in order to measure, and generates relatively simple packages. These fit bureaucratic norms for standardisation, and are amenable to dissemination through hierarchies of field extension.

5. The best informed experts on many aspects of rainfed farming systems are farm families themselves: This is almost self-evident.

Outsiders cannot expect to know as much about the components, linkages, variabilities and other complexities of a rainfed farming system as do those who live it, day in and day out, year in and year out.

6. Farmers have a greater ability to present and analyse data, to specify their needs, to experiment, and to do their own extension, than most non-farming professionals have recognised: Rainfed farmers conduct their own trials and experiments, and can be co-research workers with scientists (Sanghi, 1989). At the same time, recent innovations with participatory rural appraisal (PRA) in India and Nepal have shown that given the right rapport, methods and materials, farm families (women and men) have a greater ability than outsider professionals have supposed to observe, map, model, rank, score, quantify, diagram, interview other farmers, analyse, present information, and specify priorities (RRA Notes, 1988; Lightfoot *et al*, 1989; MYRADA, 1990. Participator Rural Appraisal (PRA) has recently shown that farmers can have a considerable capacity for making diagrams of nutrient flows on farms, and of their farming systems, diagrams which tend to be more complex and detailed than those of scientists (inferred from personal communications from Clive Lightfoot and others, interviews by Anil Shah, Parmesh Shah and others, and personal experience). Moreover, village volunteers who are farmers have been found to be good extension agents by NGOs such as World Neighbours, the Aga Khan Rural Support Programme (Gujarat), and MYRADA (Bangalore).

7. To serve the needs and objectives of rainfed farmers, reversals are needed in approach, methods and roles of agricultural research and extension: It has been recognised that extensionists and farmers need to be more involved in analysis and priority setting for scientists research (Raman, 1989). Beyond this, deeper reversals of the normal are required: of location, from research station to farm; of learning, from scientists and extensionists, to farmers; and of analysis and experiments, from scientists priorities and designs, to farmers priorities and designs. Scientists and extensionists have to "have over the stick" to farmers. Farmers become the main analysts. Farmers specify their needs and priorities, make demands on the extension and research systems, and conduct their own trials and experiments (Chambers and Ghildyal, 1985).

8. Roles for extensionists include convenor and enabler, searcher, consultant, and tour operator: Reversals generate new roles for extensionists. These include:

convenor and enabler: Extensionists bring farmers together for innovator workshops, and to enable them to conduct their own analysis of their farming systems, making available materials and facilitating the use of methods such as participatory mapping, analytical diagramming, seasonal analysis, and matrix ranking (RRA Notes and MYRADA passim).

searcher : Extensionists (and researchers) search for principles, experience, genetic material and now enterprises to meet farmers needs, which farmers can apply and experiment with. They look for choices for farmers, and try to provide them with baskets of choice to try out instead of packages of practices to adopt.

consultant : Extensionists support and advise farmers in their trials and experiments. This can include simple experimental procedures (see e.g. Bunch, 1985) and advice based on experience elsewhere.

tour operator : Extensionists arrange for farmers visits to other farms and other areas to gain and share experience, to see and learn from one anothers experiments and technologies.

With the partial exception of consultant, these roles differ from the traditional vertical model of TOT. Between farm families and extensionists, they reverse the roles of teacher, analyst, and experimenter. They put farmers and their priorities first.

9. The new roles require new methods : Although participatory methods are being rapidly rediscovered (Rhoades, 1990) and refined, they are currently largely being learnt informally through sharing, especially in the NGO sector in India and Nepal. Much experience of farmer participatory research has been documented (Amanor, 1989) but still ramains scattered. Those who have used the methods are still few. Scope for further innovation remains. The rate of innovation has also been rapid, especially with analytical diagramming by farmers. There is a research and development task here which has been largely overlooked. The technologies most needed are less physical and bilogical (although these constitute almost the entire effort of national and international agricultural research); rather they are more methodological, concerned with how to convene farmers, how to facilitate farmers own analysis, demand and trials and experiments, how to search on farmers behalf, how to be a supportive consultant, how to organise useful tours and visits, and how to change institutional procedures to make these changes of roles feasible and rewarding.

10. The new roles require new behaviour and attitudes : For these reversals, the most crucial, least recognised and weakest link is behaviour and attitudes. The missing link in much analysis and training is the quality of the face-to-face interaction of farmers with scientists and extensionists. Changes in behaviour may best come first, and be designed to change perceptions and attitudes through experience, Methods taught in a routine manner, but which force trainees to learn from and with farmers, may have a part to play here. But there is no substitute for respect for farmers and interest in what they have to say and show.

In PRA exercises, it has been found again and again that the knowledge and creativity of rural people is inhibited and smothered by outsiders demeanour and speech. Rural people appear ignorant becaus

they are repeatedly "put down". It is only when outsiders shut up, and sit down, listen and learn, as genuinely interested fellow professionals and students, that they can achieve the right rapport. It is only then that they can effectively use new methods that are participatory and versatile, and that the knowledge and analytical capabilities of rural people can be manifest.

The implication is that personal interaction, learning, and self-insight, should be part of teaching and training of agricultural extensionists. Unfortunately, much training in the TOT mode encourages attitudes of superiority which prevent farmers participation. The belief is that "they" (illiterate farmers)are the problem, and "we" (educated professionals) are the solution: that they are ignorant, and that we know. But these views have been changing fast. Sitting down and listening, and learning from and with farmers, are now part of the rhetoric; to make them personal reality for field extension staff is perhaps the most important, and the most difficult, reversal of all.